

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all listings of claims in the application.

Listing of Claims

Please amend the claims as follows:

1. (currently amended) A differential load driving circuit comprising:
a plurality of power switches selectively coupled to a load to supply current to said load;
a plurality of power switch driving circuits operable to control the conduction state of
said power switches and to selectively couple at least one of said plurality of power switches to a
PWM signal;
at least one linear current source; and
at least one current source switch operable to couple said at least one linear current source
to said load;
wherein said linear current source is coupled to said load to deliver current to said load
during low current conditions at said load, and said PWM signal coupled to said load to deliver
current to said load during high current conditions at said load, wherein a switchover point
between said linear current source and said PWM signal is selected to achieve a specified ripple
current at said load.
2. (original) A differential load driving circuit as claimed in claim 1, said plurality of
power switches forming an H-Bridge differential load driving circuit.

3. (original) A differential load driving circuit as claimed in claim 1, further comprising
two current sources, wherein one said current source being coupled to said load during a first low

current time period and the other said current source being coupled to said load during a second low current time period.

4. (currently amended) An H-Bridge load driving circuit, comprising:

four power switches forming an H-Bridge circuit selectively coupled to a load to supply current to said load;

a plurality of power switch driving circuits operable to control the conduction state of said power switches and to selectively couple at least two of said plurality of power switches to a PWM signal;

at least one current source; and

at least one current source switch operable to couple said at least one current source to said load;

wherein said H-Bridge circuit having a first mode in which said current source is coupled to said load to supply current to said load and a second mode in which at least two of said power switches are coupled to said PWM signal to supply current to said load, wherein a switchover point between said first and second modes is selected to achieve a specified ripple current at said load.

5. (currently amended) An H-Bridge load driving circuit as claimed in claim 4, wherein said first mode is a low current mode and said current source supplies a linear current to said load.

6. (currently amended) An H-Bridge load driving circuit as claimed in claim 4, wherein said second mode is a high current mode.

7. (currently amended) An H-Bridge load driving circuit, comprising:

four power switches forming an H-Bridge circuit selectively coupled to a load to supply current to said load;

at least one current source; and

at least one current source switch operable to couple said at least one current source to said load;

wherein said H-Bridge circuit is adapted to operate in a linear mode using said at least one current source switch to enable said current source and a PWM mode wherein said switches are controlled with a PWM signal, wherein a switchover point between said linear mode and said PWM mode is selected to achieve a specified ripple current at said load.

8. (original) An H-Bridge load driving circuit as claimed in claim 7, further comprising a plurality of power switch driving circuits operable to control the conduction state of said power switches and to selectively couple at least two of said plurality of power switches to a PWM signal.

9. (original) An H-Bridge load driving circuit as claimed in claim 7, further comprising at least one filter circuit coupled between at least two of said four power switches and said load.

10. (currently amended) An H-Bridge load driving circuit as claimed in claim 7, wherein said load comprises a thermal electrical cooler.

11. (currently amended) A differential driving circuit for driving a thermal electric cooler, said circuit comprising:

a plurality of power switches selectively coupled to a thermal electric cooler load to supply current to said load;

a plurality of power switch driving circuits operable to control the conduction state of said power switches and to selectively couple at least one of said plurality of power switches to a PWM signal;

at least one current source; and

at least one current source switch operable to couple said at least one current source to said load;

wherein said differential driving circuit having a first mode in which said at least one current source switch is enabled to couple said current source to said load to supply current to said load and a second mode in which at least two of said power switches are coupled to said PWM signal to supply current to said load, wherein a switchover point between said first and second modes is selected to achieve a specified ripple current at said load.

12. (original) A differential driving circuit as claimed in claim 11, said plurality of power switches forming an H-Bridge differential load driving circuit.

13. (original) A differential driving circuit as claimed in claim 11, said first mode comprising a low current mode in which the direction of current through the load defines a cooling mode.

14. (original) A differential driving circuit as claimed in claim 11, said first mode comprising a low current mode in which the direction of current through the load defines a heating mode.

15. (previously presented) A differential driving circuit as claimed in claim 11, said second mode comprising a high current mode in which the direction of current through the load defines a cooling mode.

16. (original) A differential driving circuit as claimed in claim 11, said second mode comprising a high current mode in which the direction of current through the load defines a heating mode.

17. (new) A differential load driving circuit as claimed in claim 1 wherein, at said switchover point, a current associated with said PWM signal is slightly less than a current associated with said linear current source.